

REMARKS

BY the above amendment in the accompanying RCE, the objection to the disclosure in relation to claims 4, 8, 9 and 11 - 16 as set forth in paragraph 1(a)-(e) at pages 2 and 3 of the office action, have been amended in the manner suggested by the Examiner such that the objections to the disclosure should now be overcome. Additionally, by the present amendment, each of independent claims 4 and 8 have been amended to recite the feature "wherein the oxide protective layer is substantially oxidized entirely", and a new claim 19 dependent upon claim 8 and corresponding to claim 7 dependent upon claim 4 has been presented, which recites the feature that the thickness of the oxide protective layer is 1.0 nm or less.

Turning to the specification and drawings of this application, applicants note that page 10, lines 16 and 17 describe the feature that the oxide protective layer 16 is substantially oxidized entirely, and as illustrated in Fig. 10, when the film thickness of the oxide protective layer is 1.0 nm or less, which is indicative of the oxide protective layer being substantially oxidized entirely, the film thickness is 1.0 nm or less. Thus, applicants submit that the recited features are clearly disclosed in the application.

The rejection of claims 4 and 7 - 18 under 35 USC 102(e) as being anticipated by Pinarbasi (US 6,268,985) is traversed and reconsideration and withdrawal of the rejection are respectfully requested.

As to the requirements to support a rejection under 35 USC 102, reference is made to the decision of In re Robertson, 49 USPQ 2d 1949 (Fed. Cir. 1999), wherein the court pointed out that anticipation under 35 U.S.C. §102 requires that each and

every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. As noted by the court, if the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Moreover, the court pointed out that inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

Applicants submit that each of independent claims 4 and 8 and therewith the dependent claims recite the feature of a "magnetic head having a magnetoresistive film comprising an anti-ferromagnetic layer, a ferromagnetic pinned layer, a non-magnetic intermediate layer, a soft magnetic free layer, a non-magnetic conductive oxidized stopper layer, and an oxide protective layer of metal selected from Ta, Nb, Ti, Hf, W or an alloy thereof laminated in this order on a substrate" (emphasis added). Claims 4 and 8 also now recite the feature "wherein the oxide protective layer is substantially oxidized entirely", and "wherein an intermediate layer coupling field showing a magnitude of ferromagnetic coupling between the ferromagnetic pinned layer and the soft magnetic free layer is substantially zero". Irrespective of the position set forth by the Examiner, applicants submit that Pinarbasi does not disclose such claimed features in the sense of 35 USC 102.

In setting forth the rejection, the Examiner contends that Pinarbasi teaches the claimed structure, and in particular:

a non-magnetic conductive oxidized stopper layer (504, lines 5-6 in column 9, for instance i.e., "ruthenium" is a non-magnetic conductive oxidized stopper layer as it reads on applicant's definition thereof provided in lines 8 - 12 on page 5, for instance (and an oxide protective layer 506 and/or 508) ... (emphasis added).

Turning to column 9, lines 5 and 6 of Pinarbasi which describe the feature that "the ruthenium thin film 504 may be between 3 Å to 30 Å with a preferred thickness 10 Å", such feature is illustrated in Figure 15 of Pinarbasi. Pinarbasi further states in column 8, lines 20 - 29 that the capping layer 502 includes first and second films 504 and 506 where the first film 504 was on the interlayer 230 and the second thin film 506 was on the first film 504, and that

"The first thin film 504 was 10 Å ruthenium (Ru) and the second film 506 was 25 Å of nickel oxide (NiO) The important aspect of this invention is that one or more thin films of a metal oxide are separated from the interlayer 230 or from the nickel iron (NiFe) free thin film 208 by ruthenium (Ru)." (emphasis added).

Likewise, at column 8, line 65 to column 9, line 3 Pinarbasi includes that it should be understood in a broad concept of the invention that "the capping layer includes only first and second thin films, namely a first thin film of ruthenium (Ru) and one or more thin films of a metallic oxide ... (emphasis added). Further, as column 9, lines 12 - 15 of Pinarbasi indicates that when a tantalum (Ta) layer is subjected to air that it will be oxidized to tantalum oxide (Ta_2O_5), which is a metallic oxide". (emphasis added) Hereagain, Pinarbasi recognizes that a material may be oxidized, but Pinarbasi provides no disclosure or teaching of ruthenium being an oxidized stopper layer, as claimed. Applicants submit that Pinarbasi does not disclose that the thin film of ruthenium is oxidized and as apparent from the above discussion, Pinarbasi recognizes what is an oxide, what is oxidized and what is not.

Although the Examiner refers to applicants' definition at page 5, lines 8 - 12 of the specification, wherein it is indicated that as the material for the non-magnetic high conductance oxidized stopper layer, Ru and other material can be utilized, there is no disclosure or teaching in Pinarbasi of oxidizing the Ru thin film thereof so as to provide a non-magnetic conductive oxidized stopper layer, as recited in the claims of this application. Thus, irrespective of the Examiner's contentions, Pinarbasi does not disclose the claimed arrangement in the sense of 35 USC 102 and the thin film of Ru of Pinarbasi is not a "non-magnetic conductive oxidized stopper layer" (emphasis added). Irrespective of the contentions by the Examiner, there is no disclosure or teaching in Pinarbasi of the thin film 504 of Ruthenium being an "oxidized stopper layer" as recited in the claims of this application.

Furthermore, the Examiner contends that Pinarbasi also discloses that the thickness of the metal oxide protective layer is 1.0 nm or less. More particularly, in the middle of page 4 of the office action, the Examiner refers to "lines 7-8 in column 9, for instance, i.e., "between 5 Å to 50 Å" includes values between the range of 1.0 nm or less" {as per claim 7}. Applicants note that the actual description in Pinarbasi is that "the metallic oxide thin film 506 may be between 5 Å to 50Å with a preferred thickness of 25Å". (emphasis added). Thus, it is readily apparent that Pinarbasi provides no disclosure or teaching of the now recited requirement that "the oxide protective layer is substantially oxidized entirely" (emphasis added) since, Pinarbasi suggests utilizing a thickness greater than 10Å or greater than 1.0 nm, with a preferred thickness of 2.5 nm, which is contrary to the claimed features therein. Again, this feature must be considered in conjunction with the fact that Pinarbasi does not disclose "a non-magnetic conductive oxidized stopper layer."

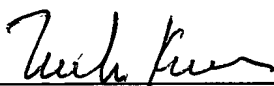
Applicants further submit that Pinarbasi also does not disclose or teach the claimed structural arrangement as recited in claims 4 and 8 and the dependent claims with the ferromagnetic coupling as recited.

For the foregoing reasons, applicants submit that Pinarbasi does not disclose the claimed features as now set forth in independent claims 4 and 8 and the dependent claims in the sense of 35 USC 102 and all claims should be considered allowable thereover.

In view of the above amendments and remarks, applicants submit that all claims present in this application should now be in condition for allowance and issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (501.39395X00) and please credit any excess fees to such deposit account.

Respectfully submitted,



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